Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)	
	)	
Amendment of the Commission's Rules to	)	WT Docket No. 04-435
Facilitate the Use of Cellular Telephones and	)	FCC 04-288
other Wireless Devices Aboard Airborne Aircraft.	)	
	)	

NOTICE OF PROPOSED RULEMAKING
REPLY COMMENTS of Kyle E. Magrill

In the above captioned FCC proceeding, the Commission seeks comments on if it should permit the use of certain personal wireless devices aboard aircraft while in flight. The Notice of Proposed Rulemaking (NPRM) primarily seeks comments on whether or not wireless communications can be achieved without causing interference to terrestrial services. Public comments were voluminous and expressed some support and a lot of opposition to the NPRM. These reply comments are intended to address some of the issues raised by those that commented on the NPRM.

Social Issues

Many commenters wrote in opposition to the NPRM. Most of those opposing comments fall into the category of social control. The NPRM does not seek comment regarding the social issues of people using cell phone in confined spaces. It is not the Commission's responsibility to be the "wireless social police". The Commission's ban on airborne personal communications is based on legitimate interference concerns to terrestrial facilities. If a practical solution can be offered to the interference problem, then the Commission's ban has no basis to exist and should be lifted.

Most of the opposing comments failed to note that in-flight telephone service or Air-to-ground (ATG) public communications has been available for 20 years on most commercial airline flights through the Airphone service. The cost of this service is typically so expensive that most flyers would prefer to wait until they have landed rather than pay the cost. However, those who are wealthy often make extensive use of these in-flight phones. I have personally sat next to a passenger that spoke on an Airphone for over two hours. At no time did I feel threatened or annoyed by the fact that my fellow passenger chose to pass his time by conducting his personal business on the phone. Clearly the use of in-flight phones has not compromised the public safety as feared by many commenters.

As the situation currently exists, phone service from aircraft is possible, but the economics of the service make it accessible only to the wealthy. If adopted, the NPRM would be a first step towards equalizing the unbalance between the wealthy and the rest of the flying public. Further, Verizon currently has a monopoly on public air-to-ground communications and, because of this monopoly, can charge relatively high service rates. Since high rates deprive the public of a desired service, in most cases, the NPRM is in the public's interest.

Finally, with respect to the social concerns of passengers and crew that cell phone usage will make the trip unbearable or dangerous, it should be pointed out that personal wireless communications are used on every other form of mass transit with no ill effects noted.

Probably the closest analogy to in-flight use would be domestic commuter trains where people sometimes ride for 1 to 2 hours. A better example can be found in Europe where train journeys are often several hours in duration. Cell phones are used in these cases and many others, yet no one pays any attention to them.

Technical concerns

The NPRM seeks comments on overcoming the technical difficulties that would be encountered if the ban were to be lifted. Principal is avoidance of interference to the terrestrial communications network. Although the Commission is not responsible for rf safety concerns to aircraft, any lifting of FCC restrictions will be meaningless unless the FAA agrees that operation of cell phones will not result in danger to aircraft, either in flight or during taxi. Some commenters embraced the concept of Pico cells. Pico cell technology may overcome the Commission's objections by causing the phones to operate at the lowest possible operating power. While this does, theoretically, provide a possible solution, it leaves several potential problems. Among the problems to be overcome are:

1. How to insure that **all** phones are communicating only to the pico cell. In order to work with today's cell phones, a pico cell would have to operate on all bands and all modes for both domestic and international phone systems. Alternately, a system could be designed to work with only one or two phone systems, such as GSM or AMPS cellular. This would allow operation of many phones either directly or by roaming to the pico cell. However, many mobile phone users would not be able to use such a limited system and would, therefore be denied service. Moreover, customers with phones not equipped to communicate with the pico cell might attempt to use their phones while in flight causing severe disruption to the terrestrial communications network and potentially endangering the aircraft. Additionally, some phones will not roam unless specifically set to do so by their users. Still other phones that are set to roam revert back to non-roam mode each time they are powered off.

2. Insuring that phones are off or disabled during critical periods. Although this appears to be a safety issue and not necessarily in the scope of this proceeding, I would suggest that any system accepted by the Commission must have some reasonable safeguards to insure that no harm will come to the aircraft or passengers as a result of the phones' use. There must, at a minimum, be a mechanism to insure that all phones are off or disabled at critical times, including take-off/climb-out and descent/landing. As well as taxi. Typically, the flight crew will instruct the passengers when it is appropriate to turn on their phones, but in an emergency, it may be desirable to allow the flight crew to terminate all phone usage. Further, some passengers may be slow to stop using their phones, especially during descent. An automatic method forcing the cell phone into the off mode should be in place.

3. Some means must be provided to **guarantee** that no phone attempts to operate at high power or to communicate with terrestrial networks during flight. Pico cells might accomplish this only if:

   A. Every cell phone on a flight is working properly,
   B. The pico cell is able to communicate with all phones on the flight.
   C. The pico cell has enough capacity to never be overloaded, even if all passengers with phones try to use them simultaneously.

If any of the conditions above are not met, then it is possible for phones to operate outside their intended function, potentially causing interference.

Proposal

One way to overcome the potential problems outlined above would be to adopt a system that would require the introduction of new "aircraft certified" telephones. Any time that a phone is powered on (such as when the flight crew advises the passenger that it is now permitted to use their electronic devices), the phone first attempts to find a pico cell. When aboard an aircraft with an operating pico cell these phones would enter an "aircraft" mode. In that mode, they would communicate only with the onboard pico cell. Each phone would be able to receive special instructions from the pico cell, such as a power-off command to allow the aircraft to take-off and land safely. These phones would also have a special mode that forced them to transmit at the lowest possible power necessary to communicate with the on-board pico cell. This power level is potentially as low as a milliwatt or less. When connected to the pico cell, the phone would not attempt to communicate with terrestrial networks as long as the pico cell was operating. In the event that the pico cell malfunctioned, all phones could be instructed to enter a sleep or standby mode. Alternatively, they could be instructed to power off with an error message. Presumably, any malfunctioning pico cell would also notify the flight crew so that they could instruct passengers to leave their phones off.

Pico cells and their "aircraft certified" phones could operate on any, or all, of the standard cell phone bands. Alternatively, some other band of frequencies could be used, possibly even on of the unlicensed bands. Any phone that is "aircraft" certified should be able to operate with domestic pico cells insuring the users with the certified cell phones that theirs' will operate on an airline that uses pico cell technology. Aircraft certified phones could also be subject to additional emissions requirements set by the FAA to insure aircraft safety.

Pico cells should, potentially, be able to monitor the local spectrum for evidence that a non-certified phone is in use aboard the aircraft or that a phone is operating at high power. If such a phone is detected, the flight crew should be notified so that they can take appropriate action such as suspending in-flight calling. It might even be possible to locate the offending phone through the use of triangulation or other techniques.

Summary:

While pico cell technology does offer some promise of solutions, it is likely that it does not fully address all of the potential problems without some additional changes. The addition of special phones that can inter-operate with the pico cells using an special aircraft mode is one solution that can help pico cells achieve the goal of bringing mobile communications to the flying public.

Respectfully Submitted,

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